

## MegaFlex Solar Array Scale-Up, up to 175kW per Wing, Phase I

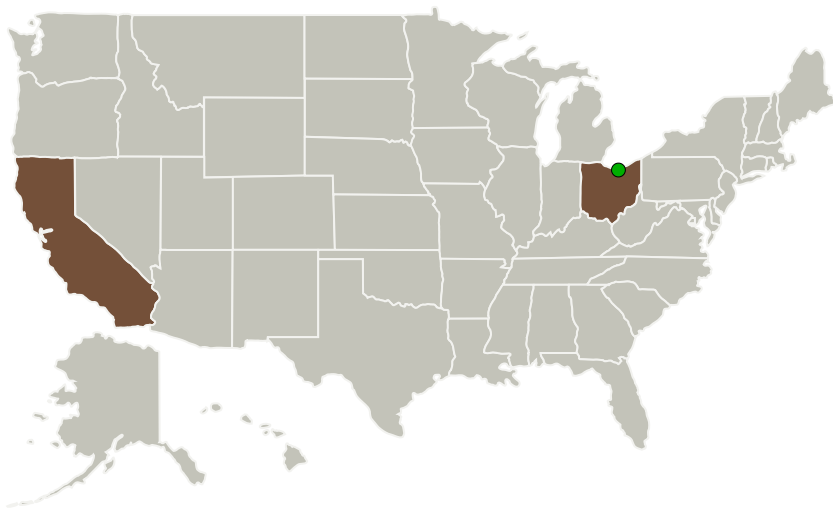
Completed Technology Project (2012 - 2012)



## Project Introduction

NASA has near-term needs for solar electric propulsion (SEP) power sources from 5 to 30 kW and longer term goals for SEP tugs as large as 300 kW and beyond. UltraFlex is a high-TRL solar array technology that spans the initial range of power levels with as-yet unmatched performance in specific power, stiffness, and strength. This technology has been to Mars, and is under development for the NASA Multi-Purpose Crew Vehicle (MPCV) and the Cygnus ISS supply vehicle by Orbital Sciences. MegaFlex is UltraFlex technology, with two enhancements to allow a 2-wing configuration to provide power levels up to 350 kW with near-term cell efficiencies. This technology meets SEP development needs for true scalability and allows for complete ground test and validation of the entire wing in existing facilities. Given the compaction capabilities, MegaFlex is an enabling technology for any mission where the power needed is more than the stowage volume allows with standard technologies. MegaFlex technology would also benefit lower power missions where higher compaction would allow use of a smaller, and less expensive, launch vehicle. MegaFlex achieves similar performance characteristics as UltraFlex with specific power up to 200 W/kg (versus 30-70 W/kg) and also higher stiffness (>3x) and strength (>5x) than conventional arrays.

## Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Angstrom Designs, Inc.	Lead Organization	Industry	Santa Barbara, California
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
California	Ohio

## Project Transitions

 **February 2012:** Project Start

 **August 2012:** Closed out

**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/138292>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Angstrom Designs, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Casey P Hare

**Co-Investigator:**

Casey Hare

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## Technology Maturity (TRL)

Start: **2**  
Current: **4**  
Estimated End: **4**



## Technology Areas

### Primary:

- TX03 Aerospace Power and Energy Storage
  - └ TX03.1 Power Generation and Energy Conversion
    - └ TX03.1.1 Photovoltaic

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System